CAREGIVERS KNOWLEDGE AND PRACTICES IN MANAGEMENT OF DIARRHOEA AMONG CHILDREN AGED 6-59 MONTHS IN CEELAFFEYN DISTRICT, SANAG REGION, SOMALILAND

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NOVEMBER 2018
DECLARATION

“This thesis is my original work and has not been presented for a Degree in any other university.”

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DEDICATION

My research work is dedicated to my husband Mohamed, my precious son Sadiq and my loving parents Hillow Adan and Magala Mohamed.
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First and foremost, I thank Allah for making me come this far in my studies.

The whole process of this master thesis reflects a combination of efforts, knowledge, experience and commitment from various personalities.

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ABBREVIATIONS AND ACRONYMS

ANOVA: Analysis of Variance

CHW: Community Health Worker

CI: Confidence Interval

DD: Diarrhoeal Disease.

FGD: Focus Group Discussion.

HSB: Health Seeking Behaviour.

IMCI: Integrated Management of Childhood illnesses.

MICS: Multiple Indicator Custer Survey.

MOH: Ministry of Health.

OR: Odds ratio

ORS: Oral Rehydration Salts.

ORT: Oral Rehydration Therapy.


WASH: Water, Sanitation and Hygiene.

WHO: World Health Organization.

SPSS: Statistical Packages for Social Sciences.

SSS: Sugar Salt Solution
DEFINITION OF OPERATIONAL TERMS

**Diarrhoea:** Diarrhea is defined by WHO as the passage of three or more loose or watery tools in a 24-hour duration.

**Knowledge:** In this study, this refers to what the caregivers know about diarrhoea management. This was measured using the following 40% is low level of knowledge, 40-59 % is considered medium and 60-80 % is considered high, while over 80% is regarded as very high level of knowledge.

**Practice:** This refers to activities related to child feeding and health seeking behaviours.

**Diarrhoea Management:** This describes how caregivers perform activities such as breastfeeding, washing hands, preparation of oral rehydration salts to cope with childhood diarrhoea.

**Caregiver:** Person responsible for providing direct care to a young child.
Diarrhoea is among the major causes of mortality among children under five years of age. Majority of these deaths are as result of dehydration and mismanagement. Caregivers’ knowledge in management of diarrhoea is likely to be related to its outcomes. In Somaliland, diarrhea disease is among the top five illnesses that affect the under-fives and cause 13% of mortality in this age group. This study aimed to investigate caregivers’ knowledge and practices in the management of diarrhoea among children aged 6-59 months in Ceelafweyn district, Somaliland. The objectives of the study were to: determine prevalence rate of diarrhoea, caregivers’ knowledge on diarrhoea, caregivers’ practices on management of diarrhoea, and the association between knowledge and practices in management of diarrhoea. A cross sectional descriptive study design was used. Data was collected using semi-structured questionnaires that was uploaded in a phone using Magpi software and 10 focus group discussions were conducted. Total of 200 caregivers who met the inclusion criteria and gave consent were recruited using systematic sampling of households. SPSS version 23 was used in the analysis of qualitative data while qualitative data was organized and analyzed thematically. Chi-square test was used for hypothesis testing. Significance level was P value of < 0.05. Findings revealed diarrhoea prevalence rate to be 47% among children aged 6-59 months with majority 42(45%) from caregivers who were aged 28-37 years with 49(52%) being housewives and those not owning a latrine had 53% of their children suffer from diarrhoea. Findings showed 62.5% identified dehydration as a symptom, 43.5% unsafe drinking water as a cause and only 19(9.5%) could identify handwashing as a preventive measure of diarrhoea. For source of knowledge, 30% obtained from community health workers (CHWs). Majority, 57% of the caregivers used tea for treating diarrhoea and 21.5% exclusively breastfed with introduction to complementary feeding before age of 6 months being at 80%. Failure of caregiver to have the knowledge in identification of four critical times of handwashing increases chances of having a child suffering from diarrhoea by 4.16 times and those who reported unsafe drinking water is a predisposing factor, their child is 0.98(p= 0.0031,95% C.I 0.77-1.096) times less likely to suffer from diarrhoea. Caregivers who gave ORS and Zinc reduced progression of diarrhoea by 49% and 17.8% respectively and those introduced complementary feeding before age of 6 months were 27% times more likely of getting diarrhoea than the one who did after 6 months. The study recommends the Ministry of health to formulate programs that would help to address diarrhoeal disease (DD) among the children aged between 6 and 59 months to help educate mothers on identification of signs and symptoms, causes, preventive measures and management practices of diarrhoea.
CHAPTER ONE: INTRODUCTION

1.1 Background information

It was in 1854 when John Snow father of Epidemiology discovered an epidemic where 616 people died after they drank water contaminated by a baby’s diaper washed in a town well (Paul Fine, 2013).

The WHO definition of diarrhoea is the passage of three or more loose or watery stools in a 24-hour duration. Diarrhoeal disease is the second leading cause of death in children under five years of age worldwide (Christa et al., 2012). Findings from study done by Fischer-Walker, et al., (2013) estimated that diarrhea accounted for 9% of the 6.9 million deaths among children under five worldwide in 2011. Ghasemi et al., (2013) in their study reported that in many developing countries, most diarrhoeal episodes are treated at home, and mothers are the key caregivers to under-five children.

UNICEF-Somalia in 2012 reported that the leading causes of infant and child mortality are illnesses such as pneumonia (24%), diarrhoea (13%), and measles (12%), as well as neonatal disorders (17%). In Multiple indicator cluster survey (MICS) done in the Somaliland by UNICEF (2011), the study indicated one in every ten children under five years of age had diarrhoea at some point in the two weeks before the survey.

Diarrhea is both preventable and treatable disease, but due to improper knowledge of mothers and their misdirected approach towards the disease management results into severe dehydration and death (Prasanna et al., 2016). It is important for caregivers to
identify and recognize certain symptoms or signs in order to seek medical advice promptly (Haroun et al., 2010).

Victoria et al., (2000), in their study reported that most diarrhoeal deaths can timely be averted with use of oral rehydration therapy (ORT) and continued proper feeding practices. Adimora & Ikefuna (2011), in their study in Nigeria revealed that most of the mothers had a poor understanding of causes of diarrhea with only 9.9% used Oral Rehydration Salts (ORS) for diarrhea treatment.

Several studies have evaluated healthcare-seeking behavior (HSB) and healthcare use among mothers in developing countries in relation to diarrheal diseases (Awasthi & Agarwal, 2003). Salule et al., (2012) in their study reported that mothers usually delay in getting medical attention which at times is too late and the child is either dehydrated or has started to lose weight. Various factors that influence the seeking of healthcare services for diarrheal diseases have been identified (Sakisaka et al., 2010). Yalew (2014) in her study in Ethiopia found that the perception of caretakers about the severity of diarrheal illness ultimately affects the decision for seeking treatment and influences the type of therapies received. Kennedy & Joseph (2010) in their study done in Tanzania found that caregivers’ basic knowledge about diarrhea depends on various factors such as educational status, and prior experience in managing the disease.

Lucas and Gilles (2009) reported that transmission of diarrhea occurs by the faecal-oral route due to poor standards of personal and environmental hygiene. Green et al., (2009) in their study found exposure to diarrheal pathogens in developing countries is associated with such factors as age of the child, quality and quantity of water, availability of toilet
facilities, housing conditions, level of education, household economic status, place of residence, feeding practices, and the general sanitary conditions (personal or domestic hygiene) around the house.

1.2. Problem Statement

Somalia is the second leading country in the world with the highest under five mortality rate (U5MR) of 180/1000 live births (UNICEF, 2012) with a prevalence rate of 13% (UNICEF 2011). Diarrhoeal disease affects millions of children worldwide; however, studies show the use of oral rehydration salts for management is declining. Study done by Kennedy and Joseph (2010) in Tanzania found that knowledge-gaps exist among caregivers regarding the predisposing factors of diarrhea. This serves as a major hindrance for adopting effective preventive and control measures.

Most diarrhea cases are treated at home with the mothers as the primary caregiver deciding on the child’s nutrition and management, therefore assessing their knowledge on this condition is critical.

The aim of the study was to assess the level of knowledge that caregivers/mothers have in regard to management of diarrhea, with a view of enhancing the quality of health information to ensure a reduction in the burden of childhood mortality because of diarrhoea in Somaliland.
1.3 Justification

The awareness of mothers about health, disease and preventive services is a barometer by which we can measure the progress of the family, the community and the country. Every day many children suffer or even die as result of inappropriate diarrhoea management beginning from the household level. Caregivers lack adequate knowledge on how to manage and even detect the danger signs of a child having diarrhoea, and this eventually leads to late referral to health facilities. This study provides a picture on caregiver’s knowledge and practices on diarrhoea management.

1.4 Research questions

1. What is the prevalence of diarrhoea among children aged 6-59 months in Ceelafweyn district?
2. What is the level of knowledge on symptoms, causes, preventive measures of diarrhoea in children aged 6-59 months among caregivers in Ceelafweyn district?
3. What are the caregiver’s practices on management of diarrhoea in children aged 6-59 months in Ceelafweyn district?
4. What is the association between knowledge and management practices of diarrhoea?

1.5 Null hypothesis

H01: There is no significant relationship between knowledge and practices amongst the caregivers in the management of diarrhoea.
1.6 Objectives

1.6.1 Broad Objective

To assess caregivers’ knowledge and practices on diarrhoea management among children 6-59 months in Ceelafweyn district, Sanag region, Somaliland.

1.6.2 Specific Objectives

The specific objectives for this study were to:

1. Determine the prevalence of diarrhoea among children aged 6-59 months in Ceelafweyn District, Somaliland.

2. Assess caregivers’ level of knowledge on symptoms, causes and preventive measures of diarrhoea among children aged 6-59 months in Ceelafweyn District, Somaliland.

3. Assess caregivers’ practices on management of diarrhoea in children aged 6-59 months in Ceelafweyn District, Somaliland.

4. Determine predictors of diarrhoea.

1.7 Significance and Anticipated output

This study is fundamental in addressing poor child health outcomes in Africa as understanding the level of knowledge and practices of caregivers with children between ages of 6-59 months, allows for awareness creation that will create a strong basis for effective Behaviour Change and Communication (BCC).
This would supplement the knowledge concerning child health in developing countries, broadening the understanding on ways to address the reduction child mortality. Mothers especially childbearing women will benefit from the result of the study as it will provide them with appropriate information concerning diarrhea in children.

To formulate policies that would help address the burden of diarrhoea in the communities living in Ceelafweyn district and larger Somaliland.

1.8 Limitations and Delimitations of the Study

Limitations are the events that happen during the study and cannot be controlled by the researcher. Delimitations are decisions made by the researcher which should be stated and describe the borders that have been set in the study.

1.8.1 Limitations

Lack of resources

The researcher financially supported the study and this was a big challenge due to high costs in travel expenses since most villages have no public transport and hence had to hire a vehicle.

Poor Infrastructure

Access to the study area was a hindrance due to poor road states. This made it necessary for the researcher to hire rough terrain vehicles, which further increased the financial burden on.
Language Barrier

Not being a local, the lead researcher used local research assistants who faced slight challenges in translating some questions into local terms.

1.8.2 Delimitations

The team employed several coping mechanisms to overcome the limitations. They hired vehicles suited to the local terrain; translation of the research instruments was done during training. The research team also recruited local research assistants who were fluent in English and could speak local dialect. Regular progress reviews done to address new challenges among the data collectors.

1.9 Assumptions of the study

The assumptions in the study were that caregivers would participate willingly and answer the interview questions in an honest and in a manner that would be understandable.
1.10 Conceptual Framework.

Fig 1.1 demonstrates the relationships among various variables in this study.

**Socio-Demographic Determinants:**
- Maternal age
- Occupation
- No of children under 5 years
- No of people living in house
  (INDEPENDENT VARIABLES)

**WASH**
- Waste disposal
- Use of Latrine
- Handwashing
  (INDEPENDENT VARIABLES)

**Diarrhoea prevalence**
  (DEPENDENT VARIABLE)

**Knowledge on symptoms, causes and preventive measures of diarrhoea**
  (MODIFYING VARIABLES)

**Management practices of diarrhoea.**
- Use of ORS, Zinc
- Fluid administration
- Breastfeeding.
- Health seeking behaviour.
  (MODIFYING VARIABLES)

*Source: Modified from WHO (2017).*

**Figure 1.1 Diarrhoea Conceptual framework**
CHAPTER TWO: LITERATURE REVIEW

2.1 Diarrhoea Burden

Li Liu et al., (2016) in their systematic review of trends of mortality causes of under five found that diarrheal disease accounts for nine percent of all deaths in deaths globally. Statistics show that there are nearly 1.7 billion cases of childhood diarrhoeal disease every year globally, and it kills 525,000 (WHO, 2017). Majority of deaths due to diarrhoea happen among children less than 2 years of age living in South Asia and sub-Saharan Africa (Walker et al., 2013). Rudan et al., (2005), reported from their study findings that diarrhoea research interest in this disease has been steadily decreasing after the development of cost-effective interventions in the 1980’s.

WHO/UNICEF (2009), in a report stated that diarrhoeal disease alone kills more children than AIDS, malaria, and measles combined. Diarrhoea predisposes children to malnutrition making them highly susceptible to other infections. Green et al., (2009), in their study reported diarrhoea to be a major contributor to illness and death among children under five in Sub-Saharan Africa. Studies from developing countries as reported by D'souza, (2003) have shown that caregivers’ delay in seeking appropriate care contributes to high number of child deaths.

2.2 Definition of Diarrhoea

Diarrhoea as defined by WHO (2005) is the passage of unusually loose or watery stools, usually at least three times in a 24-hour period. Consistency of the stools is what helps in identifying diarrhoea. Exclusively breastfed babies often pass loose stools and this this is

Diarrhoea happens as results of an imbalance in the absorption and secretion properties of the intestinal tract. William et al.,(2008) in their study found that enteric infections compromise the intestinal barrier, increase inflammation, and lead to decreased function. This causes micronutrient deficiencies and chronic immune stimulation, which have both been found to impair growth and increase susceptibility to infectious diseases.

2.2.1 Types of diarrhoea

According to World Health Organization (WHO), there are four clinical types of diarrhoea, each reflecting the basic underlying pathology and altered physiology: acute watery diarrhoea, acute bloody diarrhoea, persistent diarrhoea and diarrhoea with severe malnutrition (WHO, 2005).

Acute watery diarrhoea: Presents as sudden onset of frequent, watery, loose stools without visible blood and lasts less than two weeks. Dehydration is the main danger if there is no fluid replenishment and weight loss occur if there is no adequate nutritional support. Viral, bacterial and parasitic infections are the most common causes of acute watery diarrhoea and the episodes subside within 72 hours of onset.

Vesikari et al.,(1994), in their findings reported that the causative agents of this acute watery diarrhoea in developing countries are; Rotavirus, Shigellae, E. coli, Vibriocholerae,
Acute bloody diarrhoea: Also referred to as dysentery and its main dangers include; damage of intestinal mucosa, sepsis malnutrition and at times dehydration. The main causative agents of dysentery in developing countries are S. flexneri, and S. dysenteriae.

Persistent diarrhoea: Kare (2000), in his review of community studies in Guinea-Bissau defined it as diarrhoeal episodes of unknown infectious etiology with unusually long duration that last at least 14 days. Herbert (2016), reported from a clinical review study that 10 percent of children from developing countries had persistent diarrhoea, especially among those less than three years and more so among infants. Most of diarrhoeal episodes begin acutely either as watery diarrhoea or dysentery diarrhea and leads to weight loss in most patients. Persistent diarrhoea is responsible for about one-third to half of all diarrhoea-related deaths. Nel (2010), found in his study that persistent diarrhoea is a major cause of malnutrition in the developing countries and contributes to the high mortality rates.

Diarrhoea with severe malnutrition: Diarrhoea that occurs together with severe malnutrition is potentially dangerous as it causes severe systemic infection, dehydration, heart failure, vitamin and mineral deficiency. Despite good fluid therapy management, some children die from diarrhoea due to severe malnutrition.

Brown, (2003) reported in a study that diarrhoea causes decrease in food intake, which causes decreased nutrient absorption that leads to weight loss and failure to grow.
2.2.2 Transmission routes of diarrhoea

Jensen et al., (2004), in their study findings reported that fecal-oral route is the transmission route for infectious diarrhoea and is as result of consumption of contaminated food or water, person-to-person contact, or direct contact with fecal matter.

According to Curtis et al., (2000), there are four transmission routes that major infectious agents use to reach human hosts, human-to-human via the environment; human-to-human multiplying in the environment; human-to-animal-to human via the environment; and animal-to-human via the environment.

(Source: Adapted from AMREF, 2007, Communicable Disease Distance Education)

Figure 2.1: Transmission routes of diarrhoeal diseases
2.3 Causative agents of diarrhoea

Bacterial infections:

Platts-Mills (2015), reported from his findings that enteric bacteria is the common causative agent of diarrhoea worldwide. In tropical and developing countries the major problem among older children, adults as well as in children below age of five.

The range of causative microorganisms is very large; they include E. coli, Salmonella, Shigella, Campylobacter, Yersinia infections, Vibrio species, and Clostridium difficile, (Bartlett, 2014).

Viral infections

The most common cause of severe diarrhoea is rotavirus. Other viruses that also causes diarrhoeal disease in human, includes; Norwalk virus, Norwalk-like virus, enteric adenovirus, Calicivirus, and astrovirus (Parashar et al., 2006).

Parasites

The main route through which Parasites enter the body is through food or water and settle in the human digestive system. Jaco et al., (2004), in their study reported the parasites that are responsible in causing diarrhoea include Giardia lamblia, Entamoeba histolytica, Cyclospora cayetanensis and Cryptosporidium.
2.4 Caregivers’ knowledge on causes, signs and prevention of diarrhoea

Caregivers’ basic knowledge on diarrhea management is dependent on several factors such as; level of education, age, and earlier experience in managing the disease. Healthy practices adopted by the mother helps in the reduction of diarrhoea morbidity and mortality of under five years’ children. Mothers are the primary health care providers so that mother’s knowledge regarding causes of diseases, signs, symptoms, prevention and control are essential. The preventive measures include breast-feeding, introduction of complementary feeding after 6 months, use of clean drinking water, proper hand washing, proper use of latrines and proper disposal of fecal matter of young children.

Laura et al.,(2011), found evidence of protective effects of breastfeeding against diarrhoea incidence, prevalence, hospitalizations and mortality. Morrow et al.,(2005) in their findings reported that human milk glycans, which include oligosaccharides in their free and conjugated forms, are part of a natural immunological mechanism that accounts for the way in which human milk protects breastfed infants against diarrheal disease.

A review by Ogbo et al.,(2017) to assess infant feeding practices and diarrhoea in sub-Saharan African countries found that children who introduction to complementary feeding happened earlier than six months were associated with higher risk of diarrhoea.

According to Black,(2003), 88% of diarrhoeal deaths among children globally is as result of poor access to safe and clean drinking water, good hygiene and sanitation practices. Waddington (2009), in his study reported that latrines allow for the safe disposal of human excreta and reduce transmission and ingestion of fecal-oral pathogens.
Claudio & Robert (2008) in their study finding reported that defecation in open areas is associated with a high risk of intestinal parasitic infections and exposure to human excreta increases the risk of diarrhea infection. The risk of diarrhoea transmission is reduced when a caregiver washes their hands properly before preparing and eating food, after defecation, or after cleaning a baby’s bottom.

If the caregivers are knowledgeable enough about diarrhoea, they are able to save a child even in a critical situation like dehydration that poses the most severe threat to young children. Dehydration occurs when a child with diarrhoea losses water and electrolytes such sodium, chloride, potassium and bicarbonate.

According to WHO, (2013), a scale of three is used to rate the degree of diarrhoea.

I. *Early dehydration*: signs or symptoms are not visible.

II. *Moderate dehydration*: the signs and symptoms include; restlessness, thirst, irritability, decreased skin elasticity or sunken eyes.

III. *Severe dehydration*: symptoms become more severe, shock, with diminished consciousness, lack of urine output, cool, moist extremities, a rapid and feeble pulse, low or undetectable blood pressure, and pale skin.
2.5 Diarrhoea management protocols

WHO and UNICEF (2004) released revised recommendations aimed at dramatically reducing the number of child deaths due to diarrhoea. The recommendations take into account two significant advances: a new formulation of ORS containing lower concentrations of glucose and salt (low osmolarity) and use of zinc supplementation in addition to rehydration therapy in the management of diarrhoeal diseases.

The critical therapies in diarrhoea management include the use of ORS and fluids commonly available at home, breastfeeding, continued feeding, selective use of antibiotics and providing treatment with zinc for 10 to 14 days help in at achieving the goal of reduced morbidity and mortality due to diarrhoeal diseases.

**Oral Rehydration Salts (ORS)**

Oral rehydration therapy (ORT) has been the major milestone of diarrhoea treatment to prevent life-threatening dehydration since the 1970’s. The goals of diarrhea treatment are to maintain or recover hydration, treat the underlying causes and relieve symptoms. Rehydration together with the correction of electrolyte imbalance in the treatment of diarrhoea is critical. WHO (2005), recommends use of oral rehydration salts (ORS) which is the ‘gold standard’ of diarrhoea treatment. The use of ORS is extremely effective in treating acute watery diarrhoea and has markedly contributed to reducing childhood deaths (Santosham M, 2010). Sugar-salt solution (SSS) is the home version of ORS, involving the use of common salt, white sugar and water. Consists of 5ml level teaspoon of salt, 10 level teaspoons of granulated sugar mixed in a litter of clean water.
Zinc supplementation

The use of zinc influences the clinical course of acute diarrhoea. Sangita et al.,(2009) in their randomized trial study reported that the zinc-supplemented group experienced a 62% reduction in stool frequency per day and the placebo-supplemented group experienced a 26% reduction. A significant difference observed in reduction of amount of stool per day from day 1 to day 3 and day 5, with an obvious difference of 45% between the study groups.

Dietary Management

One of the principle ways of managing acute diarrhoea is dietary therapy. This provides the nutrients to meet the increased demands of illness and catch-up growth, in addition to the usual requirement for maintenance, growth, and physical activity. Continued feeding is important for limiting the nutritional consequences of decreased intake, digestion and absorption of essential nutrients during diarrheal illness (Michelle, 2013). The use of nutrient-rich foods helps in breaking down vicious circle of malnutrition and diarrhoea. Breastfeeding should not be stopped and caregivers to restart feeding immediately the clinical signs of dehydration diminish and continued even if severe diarrhoea persists (WHO, 2013).

Consulting a health professional

Caregivers’ are advised to seek medical attention for management of persistent diarrhoea, presence of blood in stool or if there are signs of dehydration.
Prompt and effective case management at home and facility

WHO and UNICEF (2012) have developed an integrated community case management (iCCM) package to train CHW’s to manage illness in children 2 to 59 months of age. In developing countries, delivery of health services is often weakest where the needs are greatest, and low coverage of the most needed interventions results in a significant unmet need for treatment of these major child killers. Current treatment levels in developing countries are unacceptably low with only 39 per cent of children receive correct treatment for diarrhoea (UNICEF, 2012). The ability of caregivers to identify signs and symptoms of severe childhood illness is an important predictor of well-timed care-seeking behaviour in developing countries.
CHAPTER THREE: MATERIALS AND METHODS

3.1 Introduction

This section illustrates the research methodology used in the study. In details it outlines the study design, dependent and independent variables, target population, sampling technique and sample size, construction and research instruments, pre-testing, data collection techniques, data analysis, study limitations and ethical clearance.

3.2 Research design

The study used both quantitative and qualitative approaches using cross sectional study design for data collection. This study design was selected because it can study a large number of people, at a low cost, and within a short duration.

3.3 Variables

Variables can be termed as any facet of a theory that can change or vary as part of the interaction within the theory.

3.3.1 Independent variables

In this study, independent variables included socioeconomic and demographic characteristics such as, maternal age, occupation, family size. In terms of environmental factors, they included the accessibility and use of a latrine, disposal of waste, and water sources. For behavioral factors, it included; hand- washing at key times such as before preparing food and after contact with excreta, breast feeding status, health-seeking behaviour.
3.3.2 Dependent Variable

The study’s dependent variable was diarrhoea among children 6-59 months.

3.4 Location of the study

Ceelafweyn is a district in the northern Sanag region of Somaliland. Its geographical coordinates in decimal degrees (WGS84) are 9.917 North, 47.250 east. The distance from Hargeisa, the capital city is 628 M.Th. people of Somali ethnicity inhabit the district with a total population of 117,674 residents (UNFPA, 2014). It is a semi-urban settlement that was established approximately in 1955, the district topography is mostly mountains and flat terrain. There are 11,600 children under the age of five according to (UNFPA, 2014). According to (UNICEF-Somalia, 2011), 13% of the children under five years of age suffered from diarrhoea at some point in the two weeks before the survey with one in five children with diarrhoea received ORS with continued feeding. This necessitated the need to carry out this study.

3.5 Target population

Caregivers of children aged 6-59 months in Ceelafweyn district.

3.5.1 Study population

Study population included caregivers of children aged 6-59 months old and their children. Caregivers who were residents of the area of study for at least a year before commencement of the study and were present at home were eligible for the study.
3.5.2 Sample population

The sample population comprised 191 Caregivers with children aged 6-59 months. The response rate was 100%.

3.6 Inclusion and exclusion criteria

3.6.1 Inclusion criteria

All caregivers with children aged between 6-59 months in the community were enrolled into the study after giving consent. The Caregivers, as the people who spent the most time with the children, were candidates to avail sufficient data regarding their children.

3.6.2 Exclusion criteria

Caregivers who were not mentally well. Those with children above 59 months or below 6 months.

3.7 Sampling Technique and Sample size determination.

3.7.1 Sample size determination

The sample (n) of the study was determined using Kothari (2003) formula illustrated below:

\[ n = \frac{Z^2 pq}{e^2} \]

Where:  
\( n = \) desired sample size

\( Z = \) standard deviate at 95 % level of confidence
p= 0.13; percentage of children under five who had diarrhea (UNICEF-Somalia, 2011)

q=1-p

e= acceptable error margin

\[ n=1.96^2 \times 0.13 \times 0.87/ (0.05)^2 =174. \]

To cater for non-response rate a 10% increase (17 respondents) in the sample size were added. Consequently, the definitive sample size studied was 191 caregivers with children aged 6-59 months.

### 3.7.2 Sampling techniques

Random sampling was used in the study. Ceelafweyn District has 30 villages; 10 villages were randomly selected to have a total representation of the district.

With the help of community health workers, households with children aged 6-59 months were identified through systematic sampling.

### 3.8 Research Instruments

The study applied both quantitative tools such as questionnaires and qualitative tools such as focus group discussion guides to collect data from the respondents. Construction of the instruments for research was based on the study objectives, literature review and variables of the study. The data was collected electronically using Magi application.
3.8.1 Household questionnaires

Semi structured questionnaires containing both open and closed ended questions were used to collect data. Interviews were conducted individually with mothers/caregivers having children aged 6-59 months.

The questionnaire was designed to acquire the following information:

- Demographics- age, occupation, marital status, education level, no of persons in family, no of children below 5 years.
- Caregivers’ knowledge on causes, signs, prevention measures and source of information.
- Caregivers’ knowledge on practices of management of diarrhoea i.e. ORS, Zinc, Sugar salt solution (SSS), child feeding breastfeeding and giving of fluids.
- Sanitation and hygiene.

3.8.2 Focus Group Discussion Guide

Focus group discussions guide was developed for mothers with children aged 6-59 months. It was used to collect data concerning breastfeeding practices, introduction of complementary feeding, causes and signs of diarrhoea, management of diarrhoea, sanitation and hygiene.10 FGDs were conducted each consisting of 6-10 participants from each village. The research assistants did this with the lead researcher observing the participants response.
3.9 Pre-test

The research instruments were pretested using 20 questionnaires (10%) in a village not targeted in Ceelafweyn district to test for clarity, validity and reliability of the questions in the questionnaire. Thereafter, the tool was revised accordingly and finalized for use.

3.10 Validity and Reliability

Validity was established to determine whether the research did measure what it was intended for while reliability measured to ensure consistency of the results over time and a true representation of the entire study population.

3.10.1 Validity

Pretesting of the instruments was undertaken prior to the collection of actual data in order to assess the instruments and affirm their viability in collecting the right information. This helped to certify that the questions were not only clear-cut and distinct to the respondents but were also acceptable. The village where the pretesting was done was eliminated from the sampling frame for the study to avoid introducing information bias in the study.

3.10.2 Reliability

Reliability of the tools used in data collection was confirmed during the pretest to check for the consistency of responses provided by the respondents. Research assistants training was carried out before taking part in the research. The training focused on the study concepts, study objectives, data collections techniques and process, quality assurance measures and ethical conduct. Research assistants were also appropriately supervised
while in the field to ensure professionalism and quality in the data collection process. There were quality checks such as continuous scrutinizing of the data collected to ensure accuracy, consistency and reliability of the data collected. The correlation co-efficient that was obtained was up to .60 and above, the questionnaire was considered reliable for the study.

3.11 Data collection techniques

3.11.1 Questionnaires

After a broad and all-encompassing literature research and the objectives in mind, consenting mothers were interviewed using a structured questionnaire designed by the researcher. A semi-structured questionnaire that was earlier uploaded in a mobile phone using Magpi software was used to collect data from caregivers who participated in the study. All the respondents were interviewed. The questionnaires were administered by the researcher assisted by trained research assistants.

3.11.2 Focus Group Discussion

Ten Focus group discussions (FGDs) were conducted with the caregivers of children aged 6-59 months who were recruited using convenience sampling. The participants were caregivers who were from the villages where the study was conducted. The researcher guided the FGDs to avoid creating a bias that would have resulted had some participants dominated the discussions. The discussions went on for 45 minutes. Notes on key issues raised during the discussions were recorded through note taking by the research assistants.
The discussions were recorded for future reference and the participants were notified about the recording before the study began.

3.12 Data analysis

It is the systematic use of statistical techniques to describe and illustrate, combine and evaluate data.

3.12.1 Quantitative data

The raw data that were collected in the study were cleaned, recoded and keyed into the computer using Statistical Package for the Social Sciences (SPSS) software Version 23. Quantitative variables were organized and summarized using descriptive statistics such as frequencies and percentages. Chi square test was used to test the association between categorical variables where a P value of < 0.05 was considered significant.

Analysis of variance (ANOVA) was used to compare 3 continuous variables. Then, using bivariate logistic regression analysis, crude odds ratios (COR) was calculated with 95% confidence intervals (CI). To determine the predictors, multivariate logistic regression analysis. Adjusted odds ratios (AOR) was calculated and 95% CI. The results were presented in tables and pie charts.

Level of knowledge and practice can be ascertained in numerous ways. Ashur (1977) stated that less than 40 per cent correct response should be taken as indicator of low level of knowledge, 40 – 59 per cent is considered medium and 60 – 80 per cent is considered high, while over 80 per cent is regarded as very high level of knowledge.
The Ashur’s (1977) principle was adopted in the present study to determine the knowledge and management practices of diarrhea by caregivers among children 6-59 months in Ceelafweyn district, Somaliland.

3.12.2 Qualitative data

Qualitative data was recorded and examined thematically.

3.13 Ethical Considerations

Permission to carry out the study was obtained from KU Graduate School for proposal approval. Ethical clearance and permit was sought from the Ministry of Higher Education in Somaliland. Informed consent was also requested and obtained from all the study participants. The interview process was adequately confidential as each interview participant was approached and interviewed separately, and their names undisclosed.
CHAPTER FOUR: STUDY RESULTS

4.1 Introduction

This chapter presents results of the study. The aim of the study was to investigate Caregivers’ Knowledge and practices in management of diarrhoea among children aged 6-59 months in Ceelafweyn district, Sanag Region, Somaliland. The study was based on the following objectives; to determine prevalence of diarrhoea, to assess caregivers’ level of knowledge on symptoms, causes and preventive measures, assess caregivers ‘practices on management of diarrhoea and determine the association between knowledge and practices in management of diarrhoea.

All questionnaires were distributed and all were returned fully filled. This represents response rate of 100%, which is above the recommended threshold of 75% (Kothari, 2003).

4.2 Socio-Demographic Characteristics of respondents

The study found that age of the respondents range was from 18 years to 52 years with a mean age of 31.1 years and a standard deviation of 7.7 years. The respondents were mature enough to be able to answer the questions posed about diarrhoea knowledge and practices.

Majority of respondents were from the two categories of age groups: 18-27(35%) and 28-37 years (43.5%), 147(73.5%) married, 91 (45.5%) housewives, 164 (82%) had 2 children below 5 years and 56% had between 6-10 people living in the house. It was found that half of the respondents 98(49%) had a latrine. (Table 4.1)
Table 4.1: Socio-Demographic Characteristics

<table>
<thead>
<tr>
<th>Variable</th>
<th>Levels</th>
<th>Frequency</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (Years)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>18-27</td>
<td>70</td>
<td>35</td>
<td></td>
</tr>
<tr>
<td>28-37</td>
<td>87</td>
<td>43.5</td>
<td></td>
</tr>
<tr>
<td>38-47</td>
<td>39</td>
<td>19.5</td>
<td></td>
</tr>
<tr>
<td>48-58</td>
<td>4</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Marital status</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Married</td>
<td>147</td>
<td>73.5</td>
<td></td>
</tr>
<tr>
<td>Divorced</td>
<td>22</td>
<td>11</td>
<td></td>
</tr>
<tr>
<td>Separated</td>
<td>3</td>
<td>1.5</td>
<td></td>
</tr>
<tr>
<td>Widow</td>
<td>24</td>
<td>12</td>
<td></td>
</tr>
<tr>
<td>Single</td>
<td>4</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Occupation</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Housewife</td>
<td>91</td>
<td>45.5</td>
<td></td>
</tr>
<tr>
<td>Businesswoman</td>
<td>53</td>
<td>26.5</td>
<td></td>
</tr>
<tr>
<td>Casual labourer</td>
<td>9</td>
<td>4.5</td>
<td></td>
</tr>
<tr>
<td>Looking after animals</td>
<td>44</td>
<td>22</td>
<td></td>
</tr>
<tr>
<td>Salaried</td>
<td>3</td>
<td>1.5</td>
<td></td>
</tr>
<tr>
<td>No. of children under 5 years</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0-2</td>
<td>164</td>
<td>82</td>
<td></td>
</tr>
<tr>
<td>3-5</td>
<td>36</td>
<td>18</td>
<td></td>
</tr>
<tr>
<td>No. of people in house</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0-5</td>
<td>73</td>
<td>36</td>
<td></td>
</tr>
<tr>
<td>6-10</td>
<td>111</td>
<td>56</td>
<td></td>
</tr>
<tr>
<td>&gt;10</td>
<td>16</td>
<td>8</td>
<td></td>
</tr>
<tr>
<td>Own a latrine</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>102</td>
<td>51</td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>98</td>
<td>49</td>
<td></td>
</tr>
</tbody>
</table>
4.3 Prevalence of diarrhea among children aged 6-59 months.

Out of the 200 respondents, 94 (47%) reported their children having diarrhea two weeks preceding the study with mean of 5 days of suffering from diarrhea. The study found that out of 94 children who had reported to have diarrhea 89 (95%) had acute diarrhea with no statistically significant difference from those who presented chronic cases as indicated by $\chi^2=32.982$, df=1, $p=0.076$. In terms of distribution of cases of diarrhea by age of the care givers, majority 45% were from caregivers who were aged 28-37 years, 35% were from 18-27 years, 15% from 38-47 years with the least 4% from 48-57 years with no statistically significant difference across the age category as indicated by $\chi^2=3.274$, df=3, $p=0.740$. The distribution of diarrhea cases by occupation, majority 49(52%) were housewives, 23 (25%) from businesswomen, and 18(19%) from those looking after animals. The study found that there was no statistically significance associated with occupation and diarrhea as indicated by $\chi^2=1.243$, df=4, $p=0.583$. The study also found families with members above five living in the house had prevalence of 62(66%) and those who don’t own a latrine 50(53%) had children suffering from diarrhea. Owning latrine had statistical significance with the prevalence of diarrhea. The findings showed that the prevalence of diarrhea was high among families who did not have latrine. Those who did not have a latrine were found to be 1.34 times more likely to be exposed to diarrhea condition as compared those who had latrine. It implies that waste disposal management is significant indicator that explains diarrhea in children aged 6-59 months. (Table 4.2)
Table 4.2: Prevalence of Diarrhea

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Number of Children</th>
<th>Diarrhea Prevalence</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Number of Children suffered Diarrhea</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reported Cases</td>
<td>94</td>
<td>0.47</td>
<td></td>
</tr>
<tr>
<td><strong>Types of Diarrhea</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Acute diarrhea</td>
<td>89</td>
<td>0.95</td>
<td>$\chi^2=32.982$, df=1, $p=0.076$</td>
</tr>
<tr>
<td>Persistent diarrhea</td>
<td>5</td>
<td>0.05</td>
<td></td>
</tr>
<tr>
<td><strong>Caregiver Age Category</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>18-27</td>
<td>33</td>
<td>0.35</td>
<td>$\chi^2=3.274$, df=3, $p=0.740$</td>
</tr>
<tr>
<td>28-37</td>
<td>42</td>
<td>0.45</td>
<td></td>
</tr>
<tr>
<td>38-47</td>
<td>15</td>
<td>0.16</td>
<td></td>
</tr>
<tr>
<td>48-58</td>
<td>4</td>
<td>0.04</td>
<td></td>
</tr>
<tr>
<td><strong>Caregiver Occupation</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Businesswoman</td>
<td>23</td>
<td>0.24</td>
<td>$\chi^2=1.243$, df=4, $p=0.583$</td>
</tr>
<tr>
<td>Casual laborer</td>
<td>2</td>
<td>0.02</td>
<td></td>
</tr>
<tr>
<td>Housewife</td>
<td>49</td>
<td>0.52</td>
<td></td>
</tr>
<tr>
<td>Looking after animals</td>
<td>18</td>
<td>0.19</td>
<td></td>
</tr>
<tr>
<td>Salaried person</td>
<td>2</td>
<td>0.02</td>
<td></td>
</tr>
<tr>
<td><strong>No of Children in Household</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0-2</td>
<td>72</td>
<td>0.77</td>
<td>$\chi^2=2.303$, df=1, $p=0.541$</td>
</tr>
<tr>
<td>3-5C</td>
<td>22</td>
<td>0.23</td>
<td></td>
</tr>
<tr>
<td><strong>No of people living in house</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt;5</td>
<td>32</td>
<td>0.34</td>
<td>$\chi^2=1.731$, df=1, $p=0.581$</td>
</tr>
<tr>
<td>&gt;5</td>
<td>62</td>
<td>0.66</td>
<td></td>
</tr>
<tr>
<td>Own a latrine</td>
<td>44</td>
<td>0.47</td>
<td>$\chi^2=14.593$, df=1, $p=0.001$</td>
</tr>
<tr>
<td>Don’t own a latrine</td>
<td>50</td>
<td>0.53</td>
<td></td>
</tr>
</tbody>
</table>
4.4 Caregivers level of knowledge on diarrhoea.

Out of the 200 caregivers, majority 125 (62.5%) identified dehydration, 73 (36.5%) vomiting, 70 (35%) fever and 30 (15%) identified blood in stool as symptoms of diarrhoea. In terms of causes, 87 (43.5%) unsafe drinking water, intestinal parasites 56 (28%), flies on food 18 (9%) and 6 (3%) identified all mentioned. Meanwhile for preventive measures, 26 (13%) stated proper disposal of fecal, 19 (9.5%) could identify handwashing and 7 (3.5%) stated all the mentioned measures of diarrhoea. (Table 4.3)

The study found out 30% of the caregivers got information regarding diarrhoea from a community health worker (CHW), 9% from school and majority 64% didn’t receive any information. (Figure 4.1)

**Figure 4.1: Source of information**
Table 4.3: Caregivers’ Knowledge on Diarrhea

<table>
<thead>
<tr>
<th>Symptoms</th>
<th>N=200</th>
<th></th>
<th>Level</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n</td>
<td>%</td>
<td></td>
</tr>
<tr>
<td><strong>Symptoms</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vomiting</td>
<td>Yes</td>
<td>73</td>
<td>36.5</td>
</tr>
<tr>
<td>Fever</td>
<td>Yes</td>
<td>70</td>
<td>35</td>
</tr>
<tr>
<td>Dehydration</td>
<td>Yes</td>
<td>125</td>
<td>62.5</td>
</tr>
<tr>
<td>Prolonged diarrhea</td>
<td>Yes</td>
<td>11</td>
<td>5.5</td>
</tr>
<tr>
<td>Blood in stool</td>
<td>Yes</td>
<td>30</td>
<td>15</td>
</tr>
<tr>
<td>Loss of appetite</td>
<td>Yes</td>
<td>35</td>
<td>17.5</td>
</tr>
<tr>
<td><strong>Causes</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Flies on food</td>
<td>Yes</td>
<td>18</td>
<td>9</td>
</tr>
<tr>
<td>Unsafe drinking water</td>
<td>Yes</td>
<td>87</td>
<td>43.5</td>
</tr>
<tr>
<td>Intestinal parasites</td>
<td>Yes</td>
<td>56</td>
<td>28</td>
</tr>
<tr>
<td>All above</td>
<td>Yes</td>
<td>6</td>
<td>3</td>
</tr>
<tr>
<td><strong>Preventive measures</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Handwashing at 4 critical times</td>
<td>Yes</td>
<td>19</td>
<td>9.5</td>
</tr>
<tr>
<td>Proper disposal of fecal</td>
<td>Yes</td>
<td>26</td>
<td>13</td>
</tr>
<tr>
<td>All above</td>
<td>Yes</td>
<td>7</td>
<td>3.5</td>
</tr>
</tbody>
</table>

4.5 Caregivers level of practices in management of diarrhoea

The study found 114(57%) of the caregivers used tea for treating diarrhoea, 89(44.5%) administered fluids as usual, 179(89.5%) breastfed with 43(21.5%) exclusively breastfed, 175(80%) introduced complementary feeding before the age of 6 months and 99 (49.5%) disposed the child fecal matter in latrine. This was also echoed by mothers during the FGD with them “we know ORS is used for treating diarrhoea but majority of us have not used it due to its unavailability’
Table 4.4: Practices among caregivers

<table>
<thead>
<tr>
<th></th>
<th>N=200</th>
<th></th>
<th>Level</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n</td>
<td>%</td>
<td></td>
</tr>
<tr>
<td><strong>ORS</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>139</td>
<td>69.5</td>
<td>Low</td>
</tr>
<tr>
<td>Yes</td>
<td>61</td>
<td>30.5</td>
<td></td>
</tr>
<tr>
<td><strong>Zinc</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>168</td>
<td>84</td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>32</td>
<td>16</td>
<td>Low</td>
</tr>
<tr>
<td><strong>SSS</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>198</td>
<td>99</td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>2</td>
<td>1</td>
<td>Low</td>
</tr>
<tr>
<td><strong>Soup (Maraq)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>195</td>
<td>97.5</td>
<td>Low</td>
</tr>
<tr>
<td>Yes</td>
<td>5</td>
<td>2.5</td>
<td></td>
</tr>
<tr>
<td><strong>Tea</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>86</td>
<td>43</td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>114</td>
<td>57</td>
<td>Medium</td>
</tr>
<tr>
<td><strong>Antibiotics</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>121</td>
<td>60.5</td>
<td>Low</td>
</tr>
<tr>
<td>Yes</td>
<td>79</td>
<td>39.5</td>
<td></td>
</tr>
<tr>
<td><strong>None</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>192</td>
<td>96</td>
<td>Low</td>
</tr>
<tr>
<td>Yes</td>
<td>8</td>
<td>4</td>
<td></td>
</tr>
</tbody>
</table>

**Frequency of administering drinks during infections**

<p>| | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than usual</td>
<td>30</td>
<td>15</td>
<td>Low</td>
</tr>
<tr>
<td>Same as usual</td>
<td>89</td>
<td>44.5</td>
<td></td>
</tr>
<tr>
<td>More than usual</td>
<td>78</td>
<td>39</td>
<td></td>
</tr>
<tr>
<td>Don’t know</td>
<td>3</td>
<td>1.5</td>
<td></td>
</tr>
</tbody>
</table>

**Breast feeding**

<p>| | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Whether breastfed</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>21</td>
<td>10.5</td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>179</td>
<td>89.5</td>
<td>Very high</td>
</tr>
<tr>
<td>Exclusively breastfed</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>157</td>
<td>78.5</td>
<td>Low</td>
</tr>
<tr>
<td>Yes</td>
<td>43</td>
<td>21.5</td>
<td></td>
</tr>
</tbody>
</table>

**Complementary feeding**

<p>| | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Before 6 months</td>
<td>170</td>
<td>85</td>
<td>High</td>
</tr>
<tr>
<td>After 6 months</td>
<td>30</td>
<td>15</td>
<td>Low</td>
</tr>
</tbody>
</table>

**Disposing Fecal Matter**

<p>| | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Throwing in open surrounding</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>115</td>
<td>57.5</td>
<td>Medium</td>
</tr>
<tr>
<td>Yes</td>
<td>85</td>
<td>42.5</td>
<td>High</td>
</tr>
<tr>
<td>Burying</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>179</td>
<td>89.5</td>
<td>High</td>
</tr>
<tr>
<td>Yes</td>
<td>21</td>
<td>10.5</td>
<td></td>
</tr>
<tr>
<td>Dispose in Latrine</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>101</td>
<td>50.5</td>
<td>Medium</td>
</tr>
<tr>
<td>Yes</td>
<td>99</td>
<td>49.5</td>
<td></td>
</tr>
</tbody>
</table>
In response to caregiver health seeking behavior 36.5% sought advice from health centre and 37% from a traditional healer. (Figure 4.2)

**Figure 4.2: Health Seeking Behaviour (HSB)**

### 4.6 Predictors of knowledge and practices in diarrhoea

In terms of symptoms, vomiting ($X^2=3.4$, $df=1$, $p=0.00524$), dehydration ($X^2=3.5$, $df=1$, $p=0.014$), had a significant association with diarrhoea at an $\alpha = 0.05$ level of significance. In terms of causes, unsafe drinking water ($X^2=4.13$, $df=1$, $p=0.021$) had a significant association with diarrhoea at an $\alpha = 0.05$ level of significance. The measures of handwashing ($X^2=9.03$, $df=1$, $p=0.0238$), proper disposal of fecal matter ($X^2=1.25$, $df=1$, $p=0.0051$) had a significant association with diarrhoea at $\alpha = 0.05$ level of significance. In terms of source of information regarding diarrhoea community health worker (CHW) ($X^2=2.88$, $df=1$, $p=0.0108$).

For practices in management of diarrhoea, ORS ($X^2=2.1$, $df=1$, $p=0.0384$), Zinc ($X^2=1.5$, $df=1$, $p=0.0256$), breastfeeding ($X^2=9.98$, $df=1$, $p=0.0149$) and introduction of complementary feeding ($X^2=14$, $df=1$, $p=0.029$) were found to be significantly associated with diarrhoea at an $\alpha = 0.05$ level of significance.
Table 4.5: Association between knowledge, practices and diarrhoea prevalence

<table>
<thead>
<tr>
<th>Variable</th>
<th>$\chi^2$</th>
<th>df</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Symptoms</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vomiting</td>
<td>3.4</td>
<td>1</td>
<td>0.00524*</td>
</tr>
<tr>
<td>Fever</td>
<td>3.25</td>
<td>1</td>
<td>0.37</td>
</tr>
<tr>
<td>Dehydration</td>
<td>3.5</td>
<td>1</td>
<td>0.014*</td>
</tr>
<tr>
<td>Prolonged diarrhoea</td>
<td>5.23</td>
<td>1</td>
<td>0.69</td>
</tr>
<tr>
<td>Blood in stool</td>
<td>14.25</td>
<td>1</td>
<td>0.31</td>
</tr>
<tr>
<td>Loss of appetite</td>
<td>16.63</td>
<td>1</td>
<td>0.242</td>
</tr>
<tr>
<td><strong>Causes</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Flies on food</td>
<td>8.55</td>
<td>1</td>
<td>0.592</td>
</tr>
<tr>
<td>Unsafe drinking water</td>
<td>4.13</td>
<td>1</td>
<td>0.021*</td>
</tr>
<tr>
<td>Intestinal parasite</td>
<td>2.6</td>
<td>1</td>
<td>0.512</td>
</tr>
<tr>
<td><strong>Preventive measures</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Handwashing</td>
<td>9.03</td>
<td>1</td>
<td>0.0238*</td>
</tr>
<tr>
<td>Proper disposal of fecal</td>
<td>1.25</td>
<td>1</td>
<td>0.0051*</td>
</tr>
<tr>
<td><strong>Source of information</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Community health worker(CHW)</td>
<td>2.8</td>
<td>1</td>
<td>0.0108*</td>
</tr>
<tr>
<td>Newspaper</td>
<td>0.48</td>
<td>1</td>
<td>0.475</td>
</tr>
<tr>
<td>School</td>
<td>8.55</td>
<td>1</td>
<td>0.72</td>
</tr>
<tr>
<td>No information</td>
<td>3.4</td>
<td>1</td>
<td>0.365</td>
</tr>
<tr>
<td><strong>Practices</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ORS</td>
<td>2.1</td>
<td>1</td>
<td>0.0384*</td>
</tr>
<tr>
<td>Zinc</td>
<td>1.5</td>
<td>1</td>
<td>0.0256*</td>
</tr>
<tr>
<td>Breastfeeding</td>
<td>9.98</td>
<td>1</td>
<td>0.0149*</td>
</tr>
<tr>
<td>Complementary feeding</td>
<td>14</td>
<td>1</td>
<td>0.029*</td>
</tr>
</tbody>
</table>

*significant Variable
4.6.1 Regression Analysis

All the variables that were found to have significant association with diarrhoea at bivariate level were taken to multivariate level for regression analysis. Knowledge and practices of caregivers in regards to diarrhoea explained 69.7% of the variability in the model summary as depicted by Nagelkerke RSquarevalue. It implies that only 30% is unexplained about diarrhoea management in terms of knowledge and practices.

Table 4.6: Model Summary

<table>
<thead>
<tr>
<th>Step</th>
<th>-2 Log likelihood</th>
<th>Cox &amp; Snell R Square</th>
<th>Nagelkerke R Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>256.411a</td>
<td>.579</td>
<td>.697</td>
</tr>
</tbody>
</table>

Most of independent variables that had significant association at bivariate level were found to be more significant in multivariate level of analysis.

Vomiting had a positive significant effect indicating that increased vomiting is associated with increased odds of a child having diarrhoea (OR =1.096, p = 0.0424*, C.I = 0.897-1.274). This OR implies that a child experiencing vomiting is 1.096 times (9.6%) more likely to suffer from diarrhoea. Caregiver who identified dehydration as symptom, their child were 1.23 times more likely to suffer from diarrhoea with (change from 1.131 to 1.598, p =0.0214).

For a caregiver with knowledge that unsafe drinking water as a predisposing factor, their child is 0.98 times less likely to suffer from diarrhoea (with a change from 0.77 to 1.096).
Knowledge that unsafe fecal disposal is a preventive measure decreases the chances of a child suffering from diarrhoea by 0.39 times.

Failure of the caregiver to have the knowledge in the identification of four critical times of handwashing increases chances of having a child suffering from diarrhoea by (41.6% $p = 0.004283$, change from 3.763 to 4.989).

Caregivers who received health information from a CHW their children were 0.833 times less likely to develop diarrhoea.

Caregivers who did give their children ORS and Zinc it is shown to reduces the progression of diarrhea by 49% and 17.8% respectively.

Caregivers who had introduced complementary feeding to their children before age of 6 months was 27% times more likely of getting diarrhoea than the one who did after 6 months.
### Table 4.7: Logistic Regression Analysis

<table>
<thead>
<tr>
<th>Variable</th>
<th>B</th>
<th>P-value</th>
<th>Adjusted OR</th>
<th>C.I for adjusted OR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vomiting</td>
<td>0.092</td>
<td>0.0424*</td>
<td>1.096</td>
<td>0.897-1.274</td>
</tr>
<tr>
<td>Dehydration</td>
<td>0.207</td>
<td>0.0214*</td>
<td>1.23</td>
<td>1.131-1.598</td>
</tr>
<tr>
<td>unsafe drinking water</td>
<td>0.019</td>
<td>0.0031**</td>
<td>0.981</td>
<td>0.77-1.096</td>
</tr>
<tr>
<td>unsafe fecal disposal</td>
<td>-0.942</td>
<td>0.038*</td>
<td>0.39</td>
<td>0.149-0.703</td>
</tr>
<tr>
<td>Hand washing</td>
<td>1.426</td>
<td>0.004283**</td>
<td>4.162</td>
<td>3.763-4.989</td>
</tr>
<tr>
<td>Community health worker</td>
<td>-0.183</td>
<td>0.00208**</td>
<td>0.833</td>
<td>0.71-1.171</td>
</tr>
<tr>
<td>ORS</td>
<td>-0.395</td>
<td>0.03072*</td>
<td>1.485</td>
<td>1.202-1.804</td>
</tr>
<tr>
<td>Zinc</td>
<td>-0.196</td>
<td>0.0205*</td>
<td>0.822</td>
<td>0.741-1.063</td>
</tr>
<tr>
<td>Complementary feeding</td>
<td>0.993</td>
<td>0.01842*</td>
<td>2.699</td>
<td>1.808-2.946</td>
</tr>
</tbody>
</table>

*Significant  
** Highly significant
CHAPTER FIVE: DISCUSSION, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

This chapter presents the summary of major findings, gives conclusion and recommendations based on findings and suggest areas of further research. The summary was done in line with the objectives of the study based on the output of the descriptive and inferential statistical analyses.

The study sought to assess caregiver’s knowledge and practices on management of diarrhoea among children 6-59 months in Ceelafweyn district, Sanag region, Somaliland.

5.2 Discussion

5.2.1 Demographic and social determinants

The demographic characteristics indicated that the mean age of the respondents range was 31.07 years; this showed that the caregivers were mature enough to be able to provide responses needed in the study. Of the respondents 87 (43.5%) were in the age group 28-37 years, 147 (73.5%) married, 91 (45.5%) housewives, 164 (82%) had 2 children below 5 years and 56% had between 6-10 people living in the house. The socio-demographic variables helped in determining the association with prevalence of diarrhoea among caregivers with children aged 6-59 months.
5.2.2 Prevalence of Diarrhoea among children aged between 6-59 months

The study findings revealed a prevalence rate of 47%. Findings showed that the distribution of diarrhoea cases 42(45%) were from caregivers who were aged 28-37 years and 49(52%) were housewives. This was found to be similar with a study in Ethiopia by Bezatu et al., (2013) which found majority of the mothers whose children had diarrhea were aged 25-34 years and were housewives 49(52%). Furthermore, the study those who had more than five people living in the house had 62(66%) and those who do not own a latrine 50(53%) had children suffering from diarrhoea. This study proves that crowded housing conditions and lack of a latrine play a major role in diarrhoea occurrence as stated by Waddington (2009).

5.2.3 Caregivers’ knowledge on diarrhoea

The study findings showed that of the 200 caregivers majority 125 (62.5%) identified dehydration as a symptom, 87(43.5%) unsafe drinking water as a cause and only 19 (9.5%) could identify handwashing as a preventive measure of diarrhoea. In general, the findings show majority of caregivers had low level of knowledge regarding symptoms, causes and preventive measures. This has been observed in other studies in Iran (Ghasemi,2013), Kenya (Othero,2008) and India (Shah,2012). Community health workers play a major role in providing first line treatment to sick children, the study found 30% of the caregivers’ sough information and help from CHW’s. This is in line with findings reported by UNICEF (2012) on the state of world’s children.
5.2.4 Caregivers practices in diarrhea management

The results showed that 114(57%) of the caregivers used tea for treating diarrhoea, 89(44.5%) administered fluids as usual, 179(89.5%) breastfed with 43(21.5%) exclusively breastfed, 175(80%) introduced complementary feeding before the age of 6 months and 99 (49.5%) disposed the child fecal matter in latrine. This was found to be similar in a study done in Indonesia. (Usafar, 2010)

5.2.5 Predictors of knowledge and practices in diarrhoea

Caregivers’ knowledge and practices play key roles in the management of diarrhoea in children. Having adequate information regarding diarrhoea and its management helps caregivers take appropriate measures which in turns help their children to be healthy.

Findings show that caregivers who had knowledge on vomiting and dehydration as symptoms of diarrhoea were found more likely to suffer from diarrhoea by 1.096 ($p=0.0424 \text{ 95\% C.I= 0.897-1.274}$) and 1.23($p=0.0214$, 95% C.I=1.131-1.598) times respectively. This was similarly found in a study done in India by Patel (2012) where dehydration had an odd ratio (OR) of 1.32.

The study found that caregiver with knowledge that unsafe drinking water is a predisposing factor; their child is 0.98 times less likely to suffer from diarrhoea. Knowledge that unsafe fecal disposal is a preventive measure decreases the chances of a child suffering from diarrhoea by 0.39 times. Failure of the caregiver to have the knowledge in the identification of four critical times of handwashing as a preventive
measure increases chances of having a child suffering from diarrhoea by 41.6%. This was similar to a Cochrane review done by (Ejemot-Nwadiaro et al., 2015).

This study found for caregivers who sought health information on diarrhoea from a CHW their child were 0.833 times less likely to develop diarrhoea. This means caregivers were taught on identification of signs, health seeking behaviors and feeding practices of diarrhoea management. In terms of management, the study found that a caregiver whose child suffered from diarrhoea, used ORS, and Zinc the progression of diarrhoea reduced by 49% and 17.8% respectively.

In terms of nutrition practices a caregiver who had introduced complementary feeding to their children before age of 6 months was 27% times more likely of getting diarrhoea than the one who did after 6 months. This was found to be similar in a study done by (Ogbo et al., 2017).

5.3 Conclusions

The following conclusions have been drawn from the findings of this study.

1. The study revealed about half of the children in the study had diarrhoea, which is high and needs to be addressed with a matter of urgency by the responsible authorities.

2. Caregivers’ knowledge on identification of diarrhoea symptoms, its causes and preventive measures among children aged 6-59 months were low.

3. The study revealed that the caregivers’ practices in management of diarrhoea among children aged 6-59 months were poor.
4. The findings in the study revealed that several predictors on knowledge and practices on diarrhoea management played a key role in prevention or progression of diarrhoea in children aged 6-59 months.

5.4 Recommendations

5.4.1 Recommendations from the study

Based on the conclusions, the study recommends the following:

Policy

1. Creation of programs such distribution of ORS and Zinc supplementation by the Ministry of health that would help to address diarrhoeal disease (DD) among the children aged between 6 and 59 months in Ceelafweyn district since prevalence rate of 47.5% is high.

Practice

1. The Somalia government needs to empower community health workers to effectively train Caregivers on knowledge and practices in management of diarrhoea.

5.4.2 Recommendations for further research

1. The effect of community health workers (CHW’s) in addressing diarrhoeal disease among caregivers with children age 6-59 months.

2. The study was done among Somali mothers in Somaliland, it is recommended for it to be replicated in Kenya especially the North Eastern region.
REFERENCES


Prasanna, V. R. (2016). Knowledge and Attitude of Mothers about Diarrhea, ORS and Feeding Practices in Under-Five Children in a Rural Area of Ranga Reddy,
Telangana. *Journal of Medical Science and Clinical Research*, 4(10), 13201-13209. doi:https://dx.doi.org/10.18535/jmscr/v4i10.48


Dear Respondent,

I am Halima S. Hillow from Kenyatta University, Department of Community Health. I am undertaking a research on *Effect of Caregivers’ knowledge on management of diarrhoea among children 6-59 months in Ceelafweyn district, Sanag region, Somaliland.*

I will be interviewing the mothers or primary caregivers whose children are below five years of age. I will appreciate if you provide me with the required information concerning this study area. The information you give will be highly confidential and will only be used for the purpose of this study. There will be no monetary gain in this study and no known risk exposure. Benefits of the study will help to inform us on the way forward to address management of diarrhoea.

Thank you.

Yours sincerely,

Halima S. Hillow

Consent;

Please indicate your willingness to participate in the research and respond to the questionnaire.

Yes ( )

No ( )
# Appendix 2: Questionnaire

<table>
<thead>
<tr>
<th>Question</th>
<th>Options</th>
</tr>
</thead>
<tbody>
<tr>
<td>Questionnaire Number</td>
<td></td>
</tr>
<tr>
<td>Household Number</td>
<td></td>
</tr>
<tr>
<td>Date of Interview</td>
<td></td>
</tr>
<tr>
<td>Name of Interviewer</td>
<td></td>
</tr>
</tbody>
</table>

## SECTION 1: DEMOGRAPHIC AND SOCIO ECONOMIC CHARACTERISTICS

1.1 How old are you (age in complete years)?

1.2 What is your relationship to this child?
   - Mother
   - Aunt
   - Grandmother
   - Neighbour
   - ENTER CODE

1.3 What is your marital status?
   - Single
   - Married
   - Divorced
   - Widow
   - Separated
   - ENTER CODE

1.4 What is your occupation?
   - Housewife
   - Businesswoman
   - Looking after animals
   - Causal labourer
   - Salaried person
   - ENTER CODE

1.5 How many people are living in this household?

1.6 How many children are under five years?
## SECTION 2: PREVALENCE OF DIARRHOEA

| 2.1 Has your child suffered from diarrhoea in last 2 weeks? | 1. YES  
| | 2. NO  
| | ENTER CODE…………… |

| 2.2 If yes, what is the duration? | ………………… Days |

## SECTION 3: KNOWLEDGE OF DIARRHOEA

| 3.1 Define diarrhoea | ……………………………………… |

| 3.2 What signs/symptoms will make you seek medical advice for your child's diarrhoea? (multiple answers possible, record all answers) | 1. Vomiting  
| | 2. Fever  
| | 3. Dehydration (Sunken eyes, low urine output)  
| | 4. Prolonged diarrhoea (>14 days)  
| | 5. Blood in stool  
| | 6. Loss of appetite  
| | 7. Don't know  
| | ENTER CODE…………… |

| 3.3 Do you know what causes diarrhoea? | 1. Flies on food  
| | 2. Unsafe drinking water  
| | 3. Unsafe faecal disposal  
| | 4. Intestinal parasite  
| | 5. All above  
| | 6. Don’t know  
| | ENTER CODE…………… |

| 3.4 Do you know ways of preventing diarrhoea? | 1. Washing hands at 4 critical times  
| | 2. Use of safe water for drinking  
| | 3. Disposing child faecal matter in latrines  
<p>| | ENTER CODE…………… |</p>
<table>
<thead>
<tr>
<th>Section</th>
<th>Question</th>
<th>Options</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.5</td>
<td>Where did you get information regarding diarrhoea? (circle all correct answers)</td>
<td>Community health worker, Newspaper, Television/radio, School</td>
</tr>
<tr>
<td>3.6</td>
<td>When your child had diarrhoea, did you seek medical attention?</td>
<td>YES, NO</td>
</tr>
<tr>
<td>3.7</td>
<td>Where did you seek the medical advice (Multiple answers possible record all)</td>
<td>Hospital, Health centre, Pharmacy/drug seller, Traditional healer, Traditional birth attendant, Community health worker, Others</td>
</tr>
</tbody>
</table>

**SECTION 4: PRACTICES IN MANAGEMENT OF DIARRHOEA**

<p>| 4.1 | If your child has diarrhoea, what treatments if any do you use? (Multiple answers possible) | ORS, Zinc, SSS (Sugar-Salt solution), Soup (Maraq), Home available fluids (tea), Anti-diarrhoeal medicines/antibiotics |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th>7. Others ……………(specify)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>8. None</td>
</tr>
<tr>
<td></td>
<td></td>
<td>ENTER CODE……………</td>
</tr>
</tbody>
</table>

| 4.2 | If your child has diarrhoea how often, do you give him/her drinks(read all the answers to the mother) | 1. Less than usual |
|     |   | 2. Same as usual |
|     |   | 3. More than usual |
|     |   | 4. Don’t know |
|     |   | ENTER CODE……………|

| 4.3 | Do/did you breastfeed your child? | 1. YES |
|     |   | 2. NO |
|     |   | ENTER CODE……………(if yes go to 4.5) |

| 4.4 | If yes, have you exclusively breastfed your child in the first 6 months of life? | 1. YES |
|     |   | 2. NO |
|     |   | ENTER CODE……………|

| 4.5 | At which month did you introduce complementary feeding? | 1. Before 6 months |
|     |   | 2. After 6 months |
|     |   | ENTER CODE……………|

### SECTION 5: SANITATION AND HYGIENE

| 5.1 | Do you own a latrine? | 1. YES |
|     |   | 2. NO |
|     |   | ENTER CODE……………|

| 5.2 | How do you dispose your child fecal matter? | 1. Thrown away in open surrounding |
|     |   | 2. Bury |
|     |   | 3. Dispose in latrine |
| ENTER CODE............... |
Appendix 3: Informed Consent for FGDs

Dear Respondent,

I am Halima S Hillow from Kenyatta University, Department of Community Health. I am undertaking a research on *Effect of Caregivers’ knowledge on management of diarrhoea among children 6-59 months in Ceelafweyn district, Sanag region, Somaliland.*

I will be interviewing the mothers or primary caregivers whose children are below five years of age. I will appreciate if you provide me with the required information concerning this study area. The information you give will be highly confidential and will only be used for the purpose of this study. There will be no monetary gain in this study and no known risk exposure. Benefits of the study will help to inform us on the way forward to address management of diarrhoea.

Thank you.

Yours sincerely,

Halima S. Hillow

Consent;

Please indicate your willingness to participate in the research and respond to the questionnaire.

Yes ( )  No ( )
Appendix 4: Focus Group Discussion Guide

1. In your own opinion, can a child survive on breast milk alone for the first six months of life?

2. At what age are solid / semi solid foods introduced to children in this community?

3. For how long are children breastfed in this community?

4. What influences the duration of breast feeding of children in this community?

5. What factors contribute to the standards of hygiene in the community?

6. In case of diarrhoea disease in children, what are the common management practices in the community?

7. Does feeding continue at the times of diarrhoea and immediately after and if not why?

8. In your opinion what do you think causes diarrhoea in children?

9. In your own opinion how can it be prevented?

10. What kind of food is given to a child having diarrhoea in the community?

11. Is the frequency and quantity of food altered during diarrhoea and to what extent?

12. How are children’s faeces disposed?

13. On what occasions do you wash your hands?
Appendix 5: Map Showing Study Area
Appendix 6: Research Permit

KENYATTA UNIVERSITY
GRADUATE SCHOOL

E-mail: dean-graduate@ku.ac.ke
Website: www.ku.ac.ke

FROM: Dean, Graduate School
TO: Halima Saadhiya Hillow
     C/o Community Health.

DATE: 4th April 2016
REF: Q57/CTV/PT/24189/13

SUBJECT: APPROVAL OF RESEARCH PROPOSAL

This is to inform you that Graduate School Board, at its meeting of 30th March 2016, approved your Research Proposal for the M.P.H Degree. Entitled, “Caregivers Knowledge and Practices on Management of Diarrhoea among Children 6-59 Months in Ceelafweyn District, Sanaag Region, Somaliland”.

You may now proceed with data collection, subject to clearance with the Permanent Secretary, Ministry of Higher Education, Science and Technology.

As you embark on your data collection, please note that you will be required to submit to Graduate School completed Supervision Tracking forms per semester. The form has been developed to replace the progress report forms. The supervision Tracking Forms are available at the University’s website under Graduate School webpage downloads.

Thank you.

ANNBELL MWANKI
FOR: DEAN, GRADUATE SCHOOL

c.c. Chairman, Department of Community Health

Supervisors:
1. Dr. Eunice Njogu
   C/o Department of Food, Nutrition & Dietetics
   Kenyatta University

2. Dr. Joachim Osur
   C/o Department of Environmental Health
   Kenyatta University
Appendix 7: Ethics Approval

KENYATTA UNIVERSITY
ETHICS REVIEW COMMITTEE
Fax: 8711242/8711575
Email: kuerc.chairman@ku.ac.ke
kuerc.secretary@ku.ac.ke
Website: www.ku.ac.ke

Our Ref: KU/ERC/ APPROVAL/VOL.1 (182) Date: 13th August, 2018

HALIMA SAADHIYA HILLOW,
P.O Box 21666-00100,
Nairobi,

Dear Halima,

APPLICATION NUMBER PKU/893/1953 “CAREGIVERS KNOWLEDGE AND PRACTICES ON MANAGEMENT OF DIARRHOEA AMONG CHILDREN 6-59 MONTHS IN CEELAFWEYN DISTRICT, SANAG REGION, SOMALILAND”

1. IDENTIFICATION OF PROTOCOL
The application before the committee is with a research topic “Caregivers Knowledge And Practices On Management Of Diarrhoea Among Children 6-59 Months In Ceelaafweyn District, Sanag Region, Somaliland” received on 13th August, 2018, and discussed on 14th August, 2018

2. APPLICANT
Halima Saadhiya Hillow

3. SITE
Ceelaafweyn District, Sanag Region, Somaliland

4. DECISION
The committee has considered the research protocol in accordance with the Kenyatta University Research Policy (section 7.2.1.3) and the Kenyatta University Ethics Review Committee Guidelines and APPROVED that the research may proceed for a period of ONE year from 14th August, 2018.
5. **ADVICE/CONDITIONS**

   i. Progress reports are submitted to the KU-ERC every six months and a full report is submitted at the end of the study.
   
   ii. Serious and unexpected adverse events related to the conduct of the study are reported to this committee immediately they occur.
   
   iii. Notify the Kenyatta University Ethics Committee of any amendments to the protocol.
   
   iv. Submit an electronic copy of the protocol to KUERC.

When replying, kindly quote the application number above.

If you accept the decision reached and advice and conditions given please sign in the space provided below and return to KU-ERC a copy of the letter.

[Signature]

15 AUG 2018

PROF. JUDITH KIMIYWE
CHAIRPERSON, ETHICS REVIEW COMMITTEE

I hereby accept the advice given and will fulfill the conditions therein.

Signature.......................... Dated this day of...15 August... 2018.

cc. DVC-Research Innovation and Outreach
Appendix 8: Research Authorization

To: Regional Education Officer
To: Ms. Halima Saadhiya Hillow
Cc: District Educational Officer

Our Ref: Our Ref: UOK/
Ms. Halima Saadhiya Hillow
Kenyatta University

RE: RESEARCH AUTHORIZATION

Following your application for authority to carry out research “Caregivers Knowledge attitude and Practices on Management of Diarrhoea among children 6-59 months’ access to Higher Education in Hargeisa, Somaliland,” I am pleased to inform you that you have been authorized to undertake research in Ceelafweyn District, Sanaag region of Somaliland for a period ending 24th July, 2016.

You are advised to report Regional Education Officer of Eastern & Western Sanaag, who will inform District Educational Officer, before embarking on the research project.

On completion of this research, you are expected to submit hard copy of the research report/thesis to the office of director of Higher education.

Dr. Yusuf Ahmed Ali
Director General